1.0 SUMMARY

1.1 PROPONENT'S OBJECTIVE FOR THE PROPOSAL

Cadman, Inc., has applied for a grading permit to allow for a gravel operation on land east of North Bend in unincorporated King County, Washington. The land is owned by Weyerhaeuser Company and leased to Cadman, Inc.. Cadman, Inc. intends to develop 2,100,000 tons/year of sand and gravel on the parcel. The duration of the operation is expected to be approximately 25 years, but this will depend on the market demand for aggregate products in eastern King County. As mining progresses and areas are graded and revegetated, Weyerhaeuser has committed to offer to donate the entire mineral resource site in segments to public ownership.

The project includes two separate sites, identified as the Lower and Upper Sites, east of North Bend. The Proposal includes a phased mining plan for both the Lower and Upper Sites. The Lower Site is to be excavated first with material being processed at other locations. After extraction at the Lower Site is complete, part of the depression area would be developed to process gravel extracted from the Upper Site. Gravel from the Upper Site would be conveyed down the west slope of Grouse Ridge for processing. Overburden soils would be used to establish berms for visual and noise buffering at both locations.

1.2 DESCRIPTION OF THE ALTERNATIVES

There are four alternatives and two options considered in this EIS.

1.2.1 Alternative 1 – No Action

Under this alternative, no sand and gravel mining or processing would occur on the Lower or Upper Sites. Harvesting of trees on both the Lower and Upper Sites would continue. This activity would generate noise, dust, and traffic comparable to existing activity. Forest harvesting on the site, however, would occur over a shorter period than the proposed mining.

1.2.2 Alternative 2 – Proposal

The Proposal involves development of two separate areas of land, referred to as the Lower Site and the Upper Site, for gravel extraction and processing. The properties are connected by easements allowing for the movement of sand and gravel, utilities, and other purposes facilitating the project. Operations would include excavation, washing, crushing, sorting, and stockpiling of sand and gravel. Construction of concrete and asphalt batch facilities at the Lower Site is planned in the later phases of the project. Extraction would initially occur at the Lower Site. Extracted material from the Upper Site would be moved to the Lower Site using a covered conveyor with a 36- or 42-inch-wide belt (see Figures 2-14 and 2-15). Materials from both the Lower and Upper Sites will be transported to market via Exit 34. A 160,000 ft^3 passive freshwater storage pond would be constructed on the Lower Site. Water contained within the passive freshwater storage pond would be utilized by either pump or gravity-feed, to supplement water needs for the project. A pipeline to convey processed water to the settling pond on the Upper Site would be designed along the conveyor line. A second line would return recirculated water to the Lower Site operations area.

The equipment required for processing on the Lower Site would consist of several rubber-wheeled front-end loaders, gravel-dump trucks, ready-mix concrete trucks, and a feeder, depending on the phase of the project proposal. A primary crusher would also be located on the Lower Site during the initial phases of the project. This crusher would be moved to the Upper Site during Phase 4, when the conveyor is used to transport gravel to the Lower Site (see Chapter 6). The Lower Site will be configured in a manner to reduce the backing of onsite vehicles. There will be a series of circular loop drives to load the various products in as efficient a manner as possible, avoiding maneuvering or reversing of vehicles (see Figures 2-15 and 2-16).

1.2.2.1 Alternative 2 – Lower Site Option

The Lower Site Option would limit the mining area of the Lower Site; however, the plan for the Upper Site, Alternative 2, would remain the same.

Over a 5-year period, Cadman, Inc. proposes to extract gravel from about 33.5 acres of the 115-acre site. The remaining land would be left as a buffer. In this buffer area, approximately 3.8 acres would be devoted to a passive freshwater storage pond. An operations/processing plant encompassing 20.1 acres would be constructed on the excavated floor approximately 50 feet below the current grade. The mining processing facilities will remain at least one-quarter mile from the nearest established residence. Earthen berms would be constructed to the south and north from onsite overburden or imported clean fill material. These berms would be developed to lessen the visual and noise impacts of the processing facility.

Operations would include excavation, washing, crushing, sorting, and stockpiling of sand and gravel. Construction of concrete and asphalt batch facilities at the Lower Site is planned in the later phases of the project.

The equipment required for processing on the Lower Site would consist of several front-end wheel loaders, gravel dump trucks, ready-mix concrete trucks, and a feeder, depending on the phase of the project proposal. The Lower Site will be configured in a manner to reduce the backing of onsite vehicles. There will be a series of circular loop drives to load the various products in as efficient a manner as possible, avoiding maneuvering or reversing of vehicles (see Figures 2-17 and 2-18).

1.2.3 Alternative 3 – Lower and Upper Sites (Exit 34 and Exit 38)

Under this alternative, gravel extracted from the Lower Site would be transported from the site via Exit 34. After extraction has been completed at the Lower Site, the Upper Site would be developed, with material hauled out via Exit 38 and SE Grouse Ridge Road. Weyerhaeuser holds an easement for SE Grouse Ridge Road. Aggregate processing would occur on the southeastern section of the Upper Site. Concrete and asphalt batch facilities would be located at the Lower Site (see Figure 2-19 and 2-20). A 164,200 ft^2 passive freshwater storage pond would be constructed on the Lower Site. Water contained within the passive freshwater storage pond would be utilized to supplement water needs for the project. This alternative does not include use of a conveyor line between the Lower and Upper Sites; however, a pipeline would be designed to transport fresh water from the Lower Site freshwater pond to the Upper Site for operations. This pipeline would be placed along the conveyor alignment line.

Excavations would continue from east to west, and to the south. Overburden would be removed from new deposit areas in 1-year increments prior to excavation.

Construction of processing facilities at the Upper Site includes secondary and tertiary crushers, vertical sorting screens, washing equipment, dust-control devices, and conveyors. Other facilities would include a contained fuel storage, operations office, and vehicle-maintenance building. Construction of an office and lunchroom would occur once the southeastern section of the site has been excavated to an elevation of 1,535 feet. Power, telephone lines, and water would be necessary at the Upper Site during excavation.

1.2.3.1 Alternative 3 – Lower Site Option

The Lower Site Option would limit the mining area of the Lower Site; however, the plan for the Upper Site, Alternative 3, would remain the same.

Over a 5-year period, Cadman, Inc. proposes to extract gravel from about 33.5 acres of the 115-acre site. The remaining land would be left as a buffer. In this buffer area, approximately 3.8 acres would be devoted to a passive freshwater storage pond. An operations/processing plant encompassing 20.1 acres would be constructed on the excavated floor approximately 50 feet below the current grade. The mining processing facilities will remain, at least, one-quarter mile from the nearest established residence. Earthen berms would be constructed to the south and north from onsite overburden or imported clean fill material. These berms would be developed to lessen the visual and noise impacts of the processing facility.

The operations/processing plant will crush, wash, sort and stockpile sand and gravel from the Upper Site. During later phases of the project, Cadman, Inc. will construct buildings to house the mixing of concrete and/or asphalt.

The equipment required for processing on the Lower Site would consist of several front-end wheel loaders, gravel dump trucks, ready-mix concrete trucks, and a feeder, depending on the phase of the project proposal. The Lower Site will be configured in a manner to reduce the backing of onsite vehicles. There will be a series of circular loop drives to load the various products in as efficient a manner as possible, avoiding maneuvering or reversing of vehicles (see Figures 2-21 and 2-22).

1.2.4 Alternative 4 – Upper Site Only (Exit 38)

Under this alternative, the Lower Site would not be developed. Extraction and aggregate processing would occur at the Grouse Ridge (Upper) Site, with processed materials hauled out via the SE Grouse Ridge Road and Exit 38 (see Figures 2-22 and 2-23). Weyerhaeuser holds an easement for SE Grouse Ridge Road. Onsite concrete and asphalt batch facilities are not included in this alternative.

Excavations would continue from east to west, and to the south. Overburden would be removed from new deposit areas in 1-year increments prior to excavation.

The processing facilities at the Upper Site include secondary and tertiary crushers, vertical sorting screens, washing equipment, dust-control devices, and conveyors. Other facilities would include a contained fuel storage, operations office, and vehicle-maintenance area (or building). Construction of a concrete block office and lunchroom would occur once the southeastern section of the site has been excavated to an elevation of 1,535 feet. Power, telephone lines, and water would be necessary at the Upper Site during excavation. The freshwater supply for the Upper Site would be provided from the well located on the Lower Site through an aboveground pipeline along the conveyor alignment (see Figures 2-23 and 2-24).

1.3 IMPACTS AND MITIGATION MEASURES

The construction, operation, cumulative and significant unavoidable impacts are listed in Table S-1. The mitigation measures for each area of impact are also included in this table. Table S-1 text and format is intended to be consistent with the information provided in Chapter 3.

TABLE S-1
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
SOILS AND GEOLOGY						
Construction Impacts	No impacts	1. Construction and improvement of roadways	Similar to Alternative 2	1. Construction and improvement of roadways	Similar to Alternative 3	1. Construction and improvement of roadways
		2. Reclamation activities	Similar to Alternative 2	2. Reclamation activities	Similar to Alternative 3	2. Reclamation activities
		3. Construction of earthen berms	Similar to Alternative 2	3. Construction of earthen berms	Similar to Alternative 3	3. Construction of earthen berms
		4. Clearing and preservation of topsoil and woody debris	Similar to Alternative 2	4. Clearing and preservation of topsoil and woody debris	Similar to Alternative 3	4. Clearing and preservation of topsoil and woody debris
		5. Construction of a conveyor system with an access road	Similar to Alternative 2		Similar to Alternative 3	
Operation Impacts	No impacts	1. High potential for erosion and stormwater sedimentation due to excavation, soil stockpiling, reclamation, grading and soil replacement	Similar to Alternative 2	1. High potential for erosion and stormwater sedimentation due to excavation, soil stockpiling, reclamation, grading and soil replacement	Similar to Alternative 3	1. High potential for erosion and stormwater sedimentation due to excavation, soil stockpiling, reclamation, grading and soil replacement
		2. Possible overall slope stability impact on the west side of Grouse Ridge due to construction of the conveyor system and access road	Similar to Alternative 2			
Cumulative Impacts	No impacts	1. Depletion of regional sand and gravel resource	Similar to Alternative 2	1. Depletion of regional sand and gravel resource	Similar to Alternative 3	1. Depletion of regional sand and gravel resource
Mitigation Measures	No mitigation	1. All excavation and reclamation will be in accordance with state statutes of the Mine Safety and Health Act and the Surface Mining Act	Similar to Alternative 2	1. All excavation and reclamation will be in accordance with state statutes of the Mine Safety and Health Act and the Surface Mining Act	Similar to Alternative 3	1. All excavation and reclamation will be in accordance with state statutes of the Mine Safety and Health Act and the Surface Mining Act
		2. Topsoil management	Similar to Alternative 2	2. Topsoil management	Similar to Alternative 3	2. Topsoil management

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
SOILS AND GEOLOGY						
		3. Fines generated from site vegetation-clearing activities stockpiled to manufacture subsoil, distributed over the surface of the finished mine floor, followed by distribution of the stockpiled organic-rich topsoil	Similar to Alternative 2	3. Fines generated from site vegetation-clearing activities stockpiled to manufacture subsoil, distributed over the surface of the finished mine floor, followed by distribution of the stockpiled organic-rich topsoil	Similar to Alternative 3	3. Fines generated from site vegetation-clearing activities stockpiled to manufacture subsoil, distributed over the surface of the finished mine floor, followed by distribution of the stockpiled organic-rich topsoil
Significant Unavoidable Adverse Impacts	None	1. The natural topography would be permanently altered	Similar to Alternative 2	1. The natural topography would be permanently altered	Similar to Alternative 3	1. The natural topography would be permanently altered
		2. The natural sand gravel resource of the area would be depleted	Similar to Alternative 2	2. The natural sand gravel resource of the area would be depleted	Similar to Alternative 3	2. The natural sand gravel resource of the area would be depleted
		3. Slope stability and erosion effects of the introduced reclaimed slopes differ from the natural topography	Similar to Alternative 2	3. Slope stability and erosion effects of the introduced reclaimed slopes differ from the natural topography	Similar to Alternative 3	3. Slope stability and erosion effects of the introduced reclaimed slopes differ from the natural topography

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
AIR QUALITY						
Construction Impacts	No impacts	1. Fugitive dust from removal of overburden & building of berms	Same as Alternative 2	1. Fugitive dust from removal of overburden & building of berms	Same as Alternative 3	1. Fugitive dust from removal of overburden and building of berms
		2. Particulate matter emissions from heavy equipment	Same as Alternative 2	2. Particulate matter emissions from heavy equipment	Same as Alternative 3	2. Particulate matter emissions from heavy equipment
		3. Particulates, CO & VOCs from the burning of woody debris	Same as Alternative 2	3. Particulates, CO & VOCs from the burning of woody debris	Same as Alternative 3	3. Particulates, CO & VOCs from the burning of woody debris
Operation Impacts	No impacts	1. Particulate matter from truck travel on roads, excavation and processing of aggregate	Same as Alternative 2	1. Particulate matter from truck travel on roads, excavation and processing of aggregate	Same as Alternative 3	1. Particulate matter from truck travel on roads, excavation and processing of aggregate
		2. Particulate matter from concrete plant & asphalt plant emissions	Same as Alternative 2	2. Particulate matter from concrete plant & asphalt plant emissions	Same as Alternative 3	2. Carbon monoxide from truck emissions, heavy equipment engines
		3. Carbon monoxide from truck emissions, asphalt plant, heavy equipment engines	Same as Alternative 2	3. Carbon monoxide from truck emissions, asphalt plant, heavy equipment engines	Same as Alternative 3	3. Sulfur dioxide and oxides of nitrogen from heavy equipment engines
		4. Sulfur dioxide and oxides of nitrogen from heavy equipment engines	Same as Alternative 2	4. Sulfur dioxide and oxides of nitrogen from heavy equipment engines	Same as Alternative 3	4. VOCs from diesel engines
		5. VOCs from diesel engines	Same as Alternative 2	5. VOCs from diesel engines	Same as Alternative 3	
		6. Odors from asphalt plant	Same as Alternative 2	6. Odors from asphalt plant	Same as Alternative 3	
Cumulative Impacts	No impacts	1. Particulate matter	Same as Alternative 2	1. Particulate matter	Same as Alternative 3	1. Particulate matter
Mitigation Measures	No mitigation	1. Keep aggregate moist	Same as Alternative 2	1. Keep aggregate moist	Same as Alternative 3	1. Keep aggregate moist
		2. Pave access roads	Same as Alternative 2	2. Pave access roads	Same as Alternative 3	2. Pave access roads
		3. Clean access roads	Same as Alternative 2	3. Clean access roads	Same as Alternative 3	3. Clean access roads
		4. Limit truck speed to 10 mph on site	Same as Alternative 2	4. Limit truck speed to 10 mph on site	Same as Alternative 3	4. Limit truck speed to 10 mph on site
		5. Build berms & plant with trees	Same as Alternative 2	5. Build berms & plant with trees	Same as Alternative 3	5. Install tire wash system

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
AIR QUALITY						
		6. Install tire wash system	Same as Alternative 2	6. Install tire wash system	Same as Alternative 3	6. Minimize woody debris to be burned
		7. Meet BACT requirements for the asphalt & concrete plants	Same as Alternative 2	7. Meet BACT requirements for the asphalt & concrete plants	Same as Alternative 3	7. Develop a smoke management plan for debris burning, if necessary
		8. Minimize woody debris to be burned	Same as Alternative 2	8. Minimize woody debris to be burned	Same as Alternative 3	8. Minimize woody debris to be burned
		9. Develop a smoke management plan for debris burning, if necessary	Same as Alternative 2	9. Develop a smoke management plan for debris burning, if necessary	Same as Alternative 3	9. Develop a smoke management plan for debris burning, if necessary
Significant Unavoidable Adverse Impacts	None	None	Same as Alternative 2	None	Same as Alternative 3	None

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
NOISE						
Construction Impacts	No Impacts	1. Noise from bulldozers, bellyscrappers & front-end loaders	Same as Alternative 2	1. Noise from bulldozers, bellyscrappers & front-end loaders	Same as Alternative 3	1. Noise from bulldozers, bellyscappers & front-end loaders
Operation Impacts	No Impacts	1. No increase in noise levels of nearest residences	Same as Alternative 2	1. No increase in noise levels of nearest residences	Same as Alternative 3	1. No increase in noise levels at nearest residences
		2. Increase in noise level of 11 dBA at Exit 34	Same as Alternative 2	2. Increase in noise levels of 7 dBA at Exit 34 and 13 dBA at Exit 38	Same as Alternative 3	2. Increase in noise levels of 14 dBA at Exit 38
				3. Increase in noise from trucks traveling on I-90	Same as Alternative 3	
Cumulative Impacts	No Impacts	1. No increase in noise levels at nearest residence	Same as Alternative 2	2. No increase in noise levels at nearest residence	Same as Alternative 3	1. No increase in noise levels at nearest residences
Mitigation Measures	No mitigation	1. Orient the asphalt plant so that truck entrances face east and west and the exhaust fan is on the south side of the building	Same as Alternative 2	1. Orient the asphalt plant so that truck entrances face east and west and the exhaust fan is on the south side of the building	Same as Alternative 3	1. No mitigation
		2. Maintain a low speed limit (of 25 mph) within the Lower Site lease area and out to Edgewick Road	Same as Alternative 2	2. Maintain a low speed limit (of 25 mph) within the Lower Site lease area and out to Edgewick Road	Same as Alternative 3	
		3. Ensure that all construction activities occur between 7 AM and 10 PM weekdays and 9 AM and 10 PM weekends	Same as Alternative 2	3. Ensure that all construction activities occur between 7 AM and 10 PM weekdays and 9 AM and 10 PM weekends	Same as Alternative 3	
		4. Locate the concrete plant south of the asphalt plant so the latter can serve as a noise buffer for the concrete plant	Same as Alternative 2	4. Locate the concrete plant south of the asphalt plant so the latter can serve as a noise buffer for the concrete plant	Same as Alternative 3	

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
NOISE						
		5. Replace standard acoustic backup alarm either with strobe light alarms (may require State approval) or background noise-sensitive alarms	Same as Alternative 2	5. Replace standard acoustic backup alarm either with strobe light alarms (may require State approval) or background noise-sensitive alarms	Same as Alternative 3	
Significant Unavoidable Adverse Impacts	None	None	Same as Alternative 2	None	Same as Alternative 3	None

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
WATER AND ENVIRONMENTAL HEALTH						
Construction Impacts	No Impacts	Surface Water		Surface Water		Surface Water
		1. Temporary changes in surface water runoff during construction of access roads	Same as Alternative 2	1. Temporary changes in surface water runoff during construction of access roads	Same as Alternative 3	1. Temporary changes in surface water runoff during construction of access roads
		2. Temporary increase in sedimentation and erosion during construction activity	Same as Alternative 2	2. Temporary increase in sedimentation and erosion during construction activity	Same as Alternative 3	2. Temporary increase in sedimentation and erosion during construction activity
		Groundwater		Groundwater		Groundwater
		1. No impacts	Same as Alternative 2	1. No impacts	Same as Alternative 3	1. No impacts
Operation Impacts	No Impacts	Surface Water		Surface Water		Surface Water
		1. Increased onsite surface water runoff due to new impervious surfaces	Same as Alternative 2	1. Increased onsite surface water runoff due to new impervious surfaces	Same as Alternative 3	1. Increased onsite surface water runoff due to new impervious surfaces
		2. Increased onsite erosion and sedimentation during mining activities	Same as Alternative 2	2. Increased onsite erosion and sedimentation during mining activities	Same as Alternative 3	2. Increased onsite erosion and sedimentation during mining activities
		3. Potential for accidental chemical or petroleum product spills during operations	Same as Alternative 2	3. Potential for accidental chemical or petroleum product spills during operations	Same as Alternative 3	3. Potential for accidental chemical or petroleum product spills during operations
		Groundwater		Groundwater		Groundwater
		1. Potential contamination of groundwater caused by accidental chemical or petroleum product spills and the use of biosolids for reclamation	Same as Alternative 2	1. Potential contamination of groundwater caused by accidental chemical or petroleum product spills and the use of biosolids for reclamation	Same as Alternative 3	1. Potential contamination of groundwater caused by accidental chemical or petroleum product spills and the use of biosolids for reclamation

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
WATER AND ENVIRONMENTAL HEALTH						
		2. Removal of small perched zones at the Upper Site would reduce available storage for groundwater that feeds springs on flanks of ridge	Same as Alternative 2	2. Removal of small perched zones at the Upper Site would reduce available storage for groundwater that feeds springs on flanks of ridge	Same as Alternative 3	2. Removal of small perched zones at the Upper Site would reduce available storage for groundwater that feeds springs on flanks of ridge
		3. Increased aquifer recharge due to removal of vegetation at Upper and Lower Sites	Same as Alternative 2	3. Increased aquifer recharge due to removal of vegetation at Upper and Lower Sites	Same as Alternative 3	3. Increased aquifer recharge due to removal of vegetation at Upper and Lower Sites
		4. Potential changes in spring and stream flow rates on flanks of Grouse Ridge due to changes in aquifer recharge rates and travel time for water to reach springs	Same as Alternative 2	4. Potential changes in spring and stream flow rates on flanks of Grouse Ridge due to changes in aquifer recharge rates and travel time for water to reach springs	Same as Alternative 3	4. Potential changes in spring and stream flow rates on flanks of Grouse Ridge due to changes in aquifer recharge rates and travel time for water to reach springs
		5. Decrease in groundwater availability beneath Lower Site due to use of captured surface water and groundwater for water supply	Same as Alternative 2	5. Decrease in groundwater availability beneath Lower Site due to use of captured surface water and groundwater for water supply	Same as Alternative 3	5. Decrease in groundwater availability beneath Lower Site due to use of captured surface water and groundwater for water supply
Cumulative Impacts	No Impacts	<u>Surface Water</u>		<u>Surface Water</u>		<u>Surface Water</u>
		1. Runoff volume and stormwater quality impacts are considered minimal	Same as Alternative 2	1. Runoff volume and stormwater quality impacts are considered minimal	Same as Alternative 2	1. Runoff volume and stormwater quality impacts are considered minimal
		<u>Groundwater</u>		<u>Groundwater</u>		<u>Groundwater</u>

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
WATER AND ENVIRONMENTAL HEALTH						
		1. Groundwater and surface water usage for this and other projects in the area could reduce baseflow in the Middle and/or South Fork of the Snoqualmie River	Same as Alternative 2	1. Groundwater and surface water usage for this and other projects in the area could reduce baseflow in the Middle and/or South Fork of the Snoqualmie River	Same as Alternative 2	1. Groundwater and surface water usage for this and other projects in the area could reduce baseflow in the Middle and/or South Fork of the Snoqualmie River
Mitigation Measures	No Mitigation	<u>Surface Water</u>		<u>Surface Water</u>		<u>Surface Water</u>
		1. Inspect temporary erosion and sedimentation controls and adjust on a daily basis to match site conditions and operations	Same as Alternative 2	1. Inspect temporary erosion and sedimentation controls and adjust on a daily basis to match site conditions and operations	Same as Alternative 3	1. Inspect temporary erosion and sedimentation controls and adjust on a daily basis to match site conditions and operations
		2. Routinely inspect and maintain permanent erosion, sedimentation, and water quality controls according to established policies and procedures	Same as Alternative 2	2. Routinely inspect and maintain permanent erosion, sedimentation, and water quality controls according to established policies and procedures	Same as Alternative 3	2. Routinely inspect and maintain permanent erosion, sedimentation, and water quality controls according to established policies and procedures
		3. Provide new employee training and periodic updates regarding surface water protection, policies and procedures, and proper chemical and product handling, storage and disposal	Same as Alternative 2	3. Provide new employee training and periodic updates regarding surface water protection, policies and procedures, and proper chemical and product handling, storage and disposal	Same as Alternative 3	3. Provide new employee training and periodic updates regarding surface water protection, policies and procedures, and proper chemical and product handling, storage and disposal
		4. Construct and maintain permanent drainage features and controls as each phase of development occurs	Same as Alternative 2	4. Construct and maintain permanent drainage features and controls as each phase of development occurs	Same as Alternative 3	4. Construct and maintain permanent drainage features and controls as each phase of development occurs

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
WATER AND ENVIRONMENTAL HEALTH						
		5. Restore and revegetate completed phases of development in a timely manner	Same as Alternative 2	5. Restore and revegetate completed phases of development in a timely manner	Same as Alternative 3	5. Restore and revegetate completed phases of development in a timely manner
		6. Implement long-term surface water monitoring program for construction, operation, and post-closure phases of project	Same as Alternative 2	6. Implement long-term surface water monitoring program for construction, operation, and post-closure phases of project	Same as Alternative 3	6. Implement long-term surface water monitoring program for construction, operation, and post-closure phases of project
		7. Discharge control structures, including an emergency spillway and diversion structure should be provided for the freshwater storage pond on the Lower Site	Same as Alternative 2	7. Discharge control structures, including an emergency spillway and diversion structure should be provided for the freshwater storage pond on the Lower Site	Same as Alternative 3	
		<u>Groundwater</u>		<u>Groundwater</u>		<u>Groundwater</u>
		1. Locate infiltration ponds on Upper Site above perching layers to provide flow to springs	Same as Alternative 2	1. Locate infiltration ponds on Upper Site above perching layers to provide flow to springs	Same as Alternative 3	1. Locate infiltration ponds on Upper Site above perching layers to provide flow to springs
		2. Locate infiltration ponds on the Upper Site as close as possible to areas where water is collected	Same as Alternative 2	2. Locate infiltration ponds on the Upper Site as close as possible to areas where water is collected	Same as Alternative 3	2. Locate infiltration ponds on the Upper Site as close as possible to areas where water is collected
		3. Control surface water runoff at the base of the excavation on the Upper Site with berms	Same as Alternative 2	3. Control surface water runoff at the base of the excavation on the Upper Site with berms	Same as Alternative 3	3. Control surface water runoff at the base of the excavation on the Upper Site with berms
		4. Restrict excavation in the easternmost portion of the Lower Site to periods when a 10-foot buffer zone is maintained	Same as Alternative 2	4. Restrict excavation in the easternmost portion of the Lower Site to periods when a 10-foot buffer zone is maintained	Same as Alternative 3	4. Restrict excavation in the easternmost portion of the Lower Site to periods when a 10-foot buffer zone is maintained

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
WATER AND ENVIRONMENTAL HEALTH						
		5. Conduct regular inspections and maintenance of the groundwater seepage interception trench at the Lower Site to ensure it functions properly	Same as Alternative 2	5. Conduct regular inspections and maintenance of the groundwater seepage interception trench at the Lower Site to ensure it functions properly	Same as Alternative 3	5. Conduct regular inspections and maintenance of the groundwater seepage interception trench at the Lower Site to ensure it functions properly
		6. Install a shallow piezometer adjacent to the groundwater interception trench to confirm that a five-foot buffer zone is maintained	Same as Alternative 2	6. Install a shallow piezometer adjacent to the groundwater interception trench to confirm that a five-foot buffer zone is maintained	Same as Alternative 3	6. Install a shallow piezometer adjacent to the groundwater interception trench to confirm that a five-foot buffer zone is maintained
		7. In the event that the trench does not maintain an adequate buffer zone at the Lower Site, active dewatering should be required (i.e., pumping)	Same as Alternative 2	7. In the event that the trench does not maintain an adequate buffer zone at the Lower Site, active dewatering should be required (i.e., pumping)	Same as Alternative 3	7. Avoid excavation at the Upper Site within five feet of Shallow Perching Zone
		8. Avoid excavation at the Upper Site within five feet of Shallow Perching Zone	Same as Alternative 2	8. Avoid excavation at the Upper Site within five feet of Shallow Perching Zone	Same as Alternative 3	8. Cease excavation in areas of the Upper Site where groundwater is seasonally encountered below an elevation of 1540 feet above msl until water level has dropped to maintain 10-foot buffer zone
		9. Cease excavation in areas of the Upper Site where groundwater is seasonally encountered below an elevation of 1,540 feet above msl until water has dropped to maintain a 5-foot buffer zone	Same as Alternative 2	9. Cease excavation in areas of the Upper Site where groundwater is seasonally encountered below an elevation of 1,540 feet above msl until water level has dropped to maintain 10-foot buffer zone	Same as Alternative 3	9. Collect water level data from the existing and proposed wells at the Lower Site to confirm direction of groundwater flow

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
WATER AND ENVIRONMENTAL HEALTH						
		10. Collect water level data from the existing and proposed wells at the Lower Site to confirm direction of groundwater flow	Same as Alternative 2	10. Collect water level data from the existing and proposed wells at the Lower Site to confirm direction of groundwater flow	Same as Alternative 3	10. Install a monitoring well on the Lower Site downgradient of the process area if proposed well is not located downgradient
		11. Install a monitoring well on the Lower Site downgradient of the process area if proposed well is not located downgradient	Same as Alternative 2	11. Install a monitoring well on the Lower Site downgradient of the process area if proposed well is not located downgradient	Same as Alternative 3	11. Implement a regular groundwater quality monitoring program to assess potential groundwater quality impacts
		12. Implement a regular groundwater quality monitoring program to assess potential groundwater quality impacts	Same as Alternative 2	12. Implement a regular groundwater quality monitoring program to assess potential groundwater quality impacts	Same as Alternative 3	12. Collect additional groundwater level data seasonally at the Upper Site, prior to construction, to further assess potential interception of the perched aquifers 12a Conduct a detailed groundwater investigation on Upper Site because this is a permanent facility and seasonal high groundwater cannot be easily avoided by working in other areas
		13. Collect additional groundwater level data seasonally at the Upper Site, prior to construction, to further assess potential interception of the perched aquifers	Same as Alternative 2	13. Collect additional groundwater level data seasonally at the Upper Site, prior to construction, to further assess potential interception of the perched aquifers	Same as Alternative 3	13. Maintain the wells on the Upper Site installed above the shallow perching layer and monitor the water levels in these wells during site operations

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
WATER AND ENVIRONMENTAL HEALTH						
				13a Conduct a detailed groundwater investigation on Upper Site because this is a permanent facility and seasonal high groundwater cannot be easily avoided by working in other areas		
		14. Maintain the wells on the Upper Site installed above the shallow perching layer and monitor the water levels in these wells during site operations	Same as Alternative 2	14. Maintain the wells on the Upper Site installed above the shallow perching layer and monitor the water levels in these wells during site operations	Same as Alternative 3	14. Collect additional spring and stream flow measurements prior to construction to provide baseline data
		15. Collect additional spring and stream flow measurements prior to construction to provide baseline data	Same as Alternative 2	15. Collect additional spring and stream flow measurements prior to construction to provide baseline data	Same as Alternative 3	15. Collect and analyze water samples from selected springs to provide baseline data
		16. Collect and analyze water quality samples from selected springs to provide baseline data	Same as Alternative 2	16. Collect and analyze water samples from selected springs to provide baseline data	Same as Alternative 3	16. Following construction, conduct regular observations and measurements of the spring and steam flow
		17. Following construction, conduct regular observations and measurements of the spring and steam flow	Same as Alternative 2	17. Following construction, conduct regular observations and measurements of the spring and steam flow	Same as Alternative 3	17. Locate, construct and operate the water supply well to minimize interference with water levels in nearby water supply wells
		18. Locate, construct and operate the water supply well to minimize interference with water levels in nearby water supply wells	Same as Alternative 2	18. Locate, construct and operate the water supply well to minimize interference with water levels in nearby water supply wells	Same as Alternative 3	18. Develop a site-specific agronomic application rate for GroCo if this soil amendment is used during site reclamation
		19. Develop a site-specific agronomic application rate for GroCo if this soil amendment is used during site reclamation	Same as Alternative 2	19. Develop a site-specific agronomic application rate for GroCo if this soil amendment is used during site reclamation	Same as Alternative 3	19. Develop a land application plan if GroCo would be applied in greater than agronomic rates

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
WATER AND ENVIRONMENTAL HEALTH						
		20. Develop a land application plan if GroCo would be applied in greater than agronomic rates	Same as Alternative 2	20. Develop a land application plan if GroCo would be applied in greater than agronomic rates	Same as Alternative 3	
		21. Sample and analyze GroCo or other fertilizers for nitrates to detect potential impacts	Same as Alternative 2	21. Sample and analyze GroCo or other fertilizers for nitrates to detect potential impacts	Same as Alternative 3	20. Sample and analyze GroCo or other fertilizers for nitrates to detect potential impacts
Significant Unavoidable Adverse Impacts	None	1. The alternative analysis has not identified significant and unavoidable impacts on water and environmental health Potential impacts on water quality, aquifer recharge, spring flow, and groundwater availability should be avoided with implementation of proposed mitigation measures	Same as Alternative 2	1. The alternative analysis has not identified significant and unavoidable impacts on water and environmental health. Potential impacts on water quality, aquifer recharge, spring flow, and groundwater availability should be avoided with implementation of proposed mitigation measures	Same as Alternative 3	1. The alternative analysis has not identified significant and unavoidable impacts on water and environmental health. Potential impacts on water quality, aquifer recharge, spring flow, and groundwater availability should be avoided with implementation of proposed mitigation measures

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
PLANTS AND ANIMALS						
Construction Impacts	No impacts	1. Noise will be temporarily increased due to construction	Same as Alternative 2	1. Noise will be temporarily increased due to construction	Same as Alternative 3	1. Potential impacts to riparian, aquatic habitat, and wetlands during road construction
				2. Potential impacts to riparian, aquatic habitat, and wetlands during road construction	Same as Alternative 3	
Operation Impacts	No impacts	1. Temporary loss of wildlife habitat at the Lower and Upper Sites	Same as Alternative 2	1. Temporary loss of wildlife habitat at the Lower and Upper Sites	Same as Alternative 3	1. Temporary loss of wildlife habitat at the Upper Site
		2. Elk and deer foraging on residential landscaping may increase	Same as Alternative 2	2. Elk and deer foraging on residential landscaping may increase	Same as Alternative 3	
		3. Increased competition for habitat from displaced wildlife	Same as Alternative 2	3. Increased competition for habitat from displaced wildlife	Same as Alternative 3	
		4. Increased noise levels from mining operations	Same as Alternative 2	4. Potential release of sediment into streams due to instream construction at 12 stream crossings	Same as Alternative 3	
				5. Permanent loss of riparian habitat and reduced recruitment of large woody debris to 12 stream channels due to road construction	Same as Alternative 3	
				6. Increased noise levels from mining operations	Same as Alternative 3	
Cumulative Impacts	No impacts	No impacts	Same as Alternative 2	1. Instream work at 11 tributaries of the South Fork of the Snoqualmie River (multiple sources of sediment discharge to river)	Same as Alternative 3	1. Instream work at 11 tributaries of the South Fork of the Snoqualmie River (multiple sources of sediment discharge to river)
Mitigation Measures	No mitigation	1. Extension of the proposed berm and increasing its height to decrease noise	Same as Alternative 2	1. Extension of the proposed berm and increasing its height to decrease noise	Same as Alternative 3	1. Extension of the proposed berm and increasing its height to decrease noise

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
PLANTS AND ANIMALS						
		2. Reclamation of Upper Site in segments	Same as Alternative 2	2. Reclamation of Upper Site in segments	Same as Alternative 3	2. Reclamation of Upper Site in segments
		3. Upper and Lower Sites returned to original use of timber production	Same as Alternative 2	3. Upper and Lower Sites returned to original use of timber production	Same as Alternative 3	3. Upper and Lower Sites returned to original use of timber production and Lower Site maintained
		4. Reducing depth of excavation on the Upper Site will decrease impacts on perched aquifers that feed small tributary streams in adjacent areas	Same as Alternative 2	4. Reducing depth of excavation on the Upper Site will decrease impacts on perched aquifers that feed small tributary streams in adjacent areas	Same as Alternative 3	4. Reducing depth of excavation on the Upper Site will decrease impacts on perched aquifers that feed small tributary streams in adjacent areas
				5. Road widening to follow BMPs and Standards and Guidelines at stream crossings to minimize impacts on the aquatic environment	Same as Alternative 3	5. Road widening to follow BMPs and Standards and Guidelines at stream crossings to minimize impacts on the aquatic environment
				6. Avoid wetlands where possible by expanding the road away from the wetlands in 3 of the 4 locations where wetlands occur on one side of the road	Same as Alternative 3	6. Avoid wetlands where possible by expanding the road away from the wetlands in 3 of the 4 locations where wetlands occur on one side of the road
				7. Compensating for all impacts to wetlands that cannot be avoided in accordance with King County Sensitive Area Ordinance	Same as Alternative 3	7. Compensating for all impacts to wetlands that cannot be avoided in accordance with King County Sensitive Area Ordinance
Significant Unavoidable Adverse Impacts	None	1. Temporary loss of 40 acres of wildlife habitat at the Lower Site	Same as Alternative 2	1. Temporary loss of 40 acres of wildlife habitat at the Lower Site	Same as Alternative 3	1. Temporary loss of 260 acres (in 50-acre segments) of wildlife habitat at the Upper Site

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
PLANTS AND ANIMALS						
		2. Temporary loss of 300 acres (in 50-acre segments) of wildlife habitat at the Upper Site	Same as Alternative 2	2. Temporary loss of 300 acres (in 50-acre segments) of wildlife habitat at the Upper Site	Same as Alternative 3	2. Permanent loss of riparian habitat and reduced recruitment of large woody debris to 11 stream channels due to road construction
				3. Permanent loss of riparian habitat and reduced recruitment of large woody debris to 11 stream channels due to road construction	Same as Alternative 3	
				4. Possible impacts to 4 wetlands during road construction	Same as Alternative 3	

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
ENERGY						
Construction Impacts	No impacts	1. Construction/enhance-ment of roadways	Same as Alternative 2	1. Construction/enhance-ment of roadways	Same as Alternative 3	1. Construction/enhance-ment of roadways
		2. Construction of buildings and a conveyor system	Same as Alternative 2	2. Construction of buildings	Same as Alternative 3	2. Construction of buildings
		3. Construction of processing facilities	Same as Alternative 2	3. Construction of processing facilities	Same as Alternative 3	3. Clearing of trees and vegetation
		4. Clearing of trees and vegetation	Same as Alternative 2	4. Clearing of trees and vegetation	Same as Alternative 3	4. Maintenance activities
		5. Maintenance activities	Same as Alternative 2	5. Maintenance activities	Same as Alternative 3	5. Reclamation activities
		6. Reclamation activities	Same as Alternative 2	6. Reclamation activities	Same as Alternative 3	6. Continuation of electrical service to the site
		7. Continuation of electrical service to the site	Same as Alternative 2	7. Continuation of electrical service to the site	Same as Alternative 3	7. Developing power quality control measures
		8. Developing power quality control measures	Same as Alternative 2	8. Developing power quality control measures	Same as Alternative 3	8. Installment of a well for the Site's water supply
		9. Installment of a well for the Site's water supply	Same as Alternative 2	9. Installment of a well for the Site's water supply	Same as Alternative 3	
Operation Impacts	No impacts	<u>Electrical</u>		<u>Electrical</u>		<u>Electrical</u>
		1. Increased electrical load due to site activity	Similar to Alternative 2	1. Increased electrical load due to site activity	Similar to Alternative 3	1. Increased electrical load due to site activity
		2. Power quality impact associated with non-linear loading by processing equipment	Similar to Alternative 2	2. Power quality impact associated with non-linear loading by processing equipment	Similar to Alternative 3	2. Power quality impact associated with non-linear loading by processing equipment
		<u>Fuel</u>		<u>Fuel</u>		<u>Fuel</u>
		1. Onsite operation of heavy construction equipment	Similar to Alternative 2	1. Onsite operation of heavy construction equipment	Similar to Alternative 3	1. Onsite operation of heavy construction equipment
		2. Transportation of gravel, concrete, and asphalt products	Similar to Alternative 2	2. Transportation of gravel, concrete, and asphalt products	Similar to Alternative 3	2. Transportation of gravel
		3. Workers commuting to and from site	Similar to Alternative 2	3. Workers commuting to and from site	Similar to Alternative 3	3. Workers commuting to and from site

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
ENERGY						
		4. Fuel storage/usage for heavy construction equipment during site operations	Similar to Alternative 2	4. Fuel storage/usage for heavy construction equipment during site operations	Similar to Alternative 3	4. Fuel storage/usage for heavy construction equipment during site operations
		5. Fuel storage/usage for processing facilities	Similar to Alternative 2	5. Fuel storage/usage for processing facilities	Similar to Alternative 3	5. Fuel storage/usage for processing facilities
		6. Incremental increase in energy consumption from trucks/vehicles associated with gravel extraction operations of 16% over I-90's current energy usage per mile of transportation	Similar to Alternative 2	6. Incremental increase in energy consumption from trucks/vehicles associated with gravel extraction operations of 36% over I-90's current energy usage per mile of transportation	Similar to Alternative 3	6. Incremental increase in energy consumption from trucks/vehicles associated with gravel extraction operations of 26% over I-90's current energy usage per mile of transportation
Cumulative Impacts	No impacts	1. Energy use will expand throughout the area. The proposed development represents a minor input into the overall energy demand and distribution patterns. No specific cumulative impacts related to energy are identified	Same as Alternative 2	1. Energy use will expand throughout the area. The proposed development represents a minor input into the overall energy demand and distribution patterns. No specific cumulative impacts related to energy are identified	Same as Alternative 3	1. Energy use will expand throughout the area. The proposed development represents a minor input into the overall energy demand and distribution patterns. No specific cumulative impacts related to energy are identified
Mitigation Measures	No mitigation	<u>Electrical</u>		<u>Electrical</u>		<u>Electrical</u>
		1. Major electrically powered equipment should have power quality controls	Same as Alternative 2	1. Major electrically powered equipment should have power quality controls	Same as Alternative 3	1. Major electrically powered equipment should have power quality controls
		2. There should be centralized power conditioning within the development area, or separate power feeds and power quality controls originating at the power substation	Same as Alternative 2	2. There should be centralized power conditioning within the development area, or separate power feeds and power quality controls originating at the power substation	Same as Alternative 3	2. There should be centralized power conditioning within the development area, or separate power feeds and power quality controls originating at the power substation

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
ENERGY						
		3. The conveyor system for site use should be designed to generate and harness power	Same as Alternative 2	3. The conveyor system for site use should be designed to generate and harness power	Same as Alternative 3	
		4. The large motors associated with the asphalt batch plant process should use variable frequency drive motors to prevent a large voltage drop when the motors are started	Same as Alternative 2	4. The large motors associated with the asphalt batch plant process should use variable frequency drive motors to prevent a large voltage drop when the motors are started	Same as Alternative 3	
		5. Transformers should be sized to handle the voltage drop as well as the working load, and should be as close as possible to each service point	Same as Alternative 2	5. Transformers should be sized to handle the voltage drop as well as the working load, and should be as close as possible to each service point	Same as Alternative 3	
		6. The wire gauge should be sized to maximize voltage to the motors	Same as Alternative 2	6. The wire gauge should be sized to maximize voltage to the motors	Same as Alternative 3	
		<u>Fuel</u>		<u>Fuel</u>		<u>Fuel</u>
		1. Fuel efficiency improvements for specific transport vehicles	Same as Alternative 2	1. Fuel efficiency improvements for specific transport vehicles	Same as Alternative 3	1. Fuel efficiency improvements for specific transport vehicles
		2. Road improvements for more efficient transportation	Same as Alternative 2	2. Road improvements for more efficient transportation	Same as Alternative 3	2. Road improvements for more efficient transportation
		3. Carpooling	Same as Alternative 2	3. Carpooling	Same as Alternative 3	3. Carpooling
		4. Optimization of transportation methods and routes	Same as Alternative 2	4. Optimization of transportation methods and routes	Same as Alternative 3	4. Optimization of transportation methods and routes
		<u>Propane</u>		<u>Propane</u>		<u>Propane</u>
		1. Compliance with all regulations regarding use and storage of propane gas	Same as Alternative 2	1. Compliance with all regulations regarding use and storage of propane gas	Same as Alternative 3	1. Compliance with all regulations regarding use and storage of propane gas
Significant Unavoidable Impacts	None	None	Same as Alternative 2	None	Same as Alternative 3	None

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
LAND USE						
Construction Impacts	No mining impacts related to Proposal. Timber harvesting impacts similar to clearing prior to mining	1. Phased clearing and construction would increase levels of noise, dust, and truck traffic. Construction activities would be short-term	Same as Alternative 2	1. Overall construction conditions are similar to Alternative 2. Noise, dust, and traffic associated with construction of aggregate processing facility transferred from Lower to Upper Site	Same as Alternative 3	1. Construction impacts limited to Upper Site. Overall impacts would be less than those identified for Alternative 2
Operation Impacts	No mining impacts related to Proposal Future timber harvesting likely	1. Temporary conversion of a portion of the sites to sand and gravel mining. Existing forestry and informal recreational uses foreclosed during mining	Similar to Alternative 2	1. Land-use impacts during initial phases similar to Alternative 2. A portion of activity transferred to the Upper Site. Land use impacts generally similar to Alternative 2	Similar to Alternative 3	1. Mining conditions on Upper Site similar to those identified for Alternative 2
		2. Intensity of mining use greater than residential uses to the immediate north. Indirect spin-off impacts not anticipated	Same as Alternative 2			
Cumulative Impacts	No impacts	1. Because the location of mining is largely based on suitability of resources and land use designations, addition of proposed mining would not increase pressure for additional mining in the area	Same as Alternative 2	1. Because the location of mining is largely based on suitability of resources and land use designations, addition of proposed mining would not increase pressure for additional mining in the area	Same as Alternative 2	1. Because the location of mining is largely based on suitability of resources and land use designations, addition of proposed mining would not increase pressure for additional mining in the area
Mitigation Measures	No mitigation	1. Mining would be phased	Same as Alternative 2	1. Mining would be phased	Same as Alternative 2	1. Mining would be phased
		2. A natural buffer would be provided around the perimeter of the sites	Same as Alternative 2	2. A natural buffer would be provided around the perimeter of the sites	Same as Alternative 2	2. A natural buffer would be provided around the perimeter of the sites
		3. All outdoor lighting would be shielded to avoid glare to surrounding areas	Same as Alternative 2	3. All outdoor lighting would be shielded to avoid glare to surrounding areas	Same as Alternative 2	3. All outdoor lighting would be shielded to avoid glare to surrounding areas

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
LAND USE						
		4. Dust and noise levels would be minimized	Same as Alternative 2	4. Dust and noise levels would be minimized	Same as Alternative 2	4. Dust and noise levels would be minimized
Significant Unavoidable Impacts	None	1. Proposal would result in the temporary conversion of forest use	Same as Alternative 2	1. Proposal would result in the temporary conversion of forest use	Same as Alternative 3	1. None

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
HISTORIC, CULTURAL, AND ARCHAEOLOGICAL RESOURCES						
Construction Impacts	No impacts	No impacts	No impacts	No impacts	No impacts	No impacts
Operation Impacts	No impacts	No impacts	No impacts	No impacts	No impacts	No impacts
Cumulative Impacts	No impacts	No impacts	No impacts	No impacts	No impacts	No impacts
Mitigation Measures	No mitigation	1. As project areas are cleared of vegetation, additional field investigations should be conducted	Same as Alternative 2	1. As project areas are cleared of vegetation, additional field investigations should be conducted	Same as Alternative 3	1. As project areas are cleared of vegetation, additional field investigations should be conducted
		2. Construction/operation crews should be trained to recognize potential archaeological sites	Same as Alternative 2	2. Construction/operation crews should be trained to recognize potential archaeological sites	Same as Alternative 3	2. Construction/operation crews should be trained to recognize potential archaeological sites
		3. In the case of unanticipated discovery, ground-disturbing activities should halt until a qualified archaeologist, with assistance from the Office of Historic Preservation, King County ORC, and local Native American groups can evaluate the significance of the find	Same as Alternative 2	3. In the case of unanticipated discovery, ground-disturbing activities should halt until a qualified archaeologist, with assistance from the Office of Historic Preservation, King County ORC, and local Native American groups can evaluate the significance of the find	Same as Alternative 3	3. In the case of unanticipated discovery, ground-disturbing activities should halt until a qualified archaeologist, with assistance from the Office of Historic Preservation, King County ORC, and local Native American groups can evaluate the significance of the find
Significant Unavoidable Impacts	None	None	None	None	None	None

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
RECREATION						
Construction Impacts	No mining impacts. Timber harvesting impacts similar to clearing prior to mining	1. Phased clearing and establishment of processing facilities would not directly impact formal recreational resources	Similar to Alternative 2	1. Phased clearing and establishment of processing facilities would not directly impact formal recreational resources	Similar to Alternative 3	1. Construction impacts on Upper Site similar to Alternative 2 2. No impact on formal recreational resources
Operation Impacts	Potential for unauthorized public recreational use would continue	1. No direct loss of formal recreational facilities. Site employees would generate a minor increase in demand for area recreational facilities	Similar to Alternative 2	1. No direct loss of formal recreational facilities. Site employees would generate a minor increase in demand for area recreational facilities	Similar to Alternative 3	1. Recreational impacts on the Upper Site would be similar to, but less than, Alternative 2
		2. Increase in traffic and change in visual character could indirectly impact offsite recreational facilities	Similar to Alternative 2	2. Increase in traffic and change in visual character could indirectly impact offsite recreational facilities	Similar to Alternative 3	
		3. Proposed mining would temporarily delay potential to develop site(s) improvements listed in the "Middle Fork Snoqualmie River Valley: River Corridor Public Use Concept Plan"	Similar to Alternative 2	3. Proposed mining would temporarily delay potential to develop site(s) improvements listed in the "Middle Fork Snoqualmie River Valley: River Corridor Public Use Concept Plan"	Similar to Alternative 3	
Cumulative Impacts	No impacts	1. Cumulative recreation impacts resulting from induced industrial activity are not anticipated	Same as Alternative 2	1. Cumulative recreation impacts resulting from induced industrial activity are not anticipated	Same as Alternative 3	1. Cumulative recreation impacts resulting from induced industrial activity are not anticipated
Mitigation Measures	No mitigation	1. Mining would be phased to limit area exposed at any one time	Same as Alternative 2	1. Mining would be phased to limit area exposed at any one time	Same as Alternative 3	1. Similar to Alternative 2. A natural buffer would be provided around the perimeter
		2. A natural buffer would be provided around the perimeter	Same as Alternative 2	2. A natural buffer would be provided around the perimeter	Same as Alternative 3	

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
RECREATION						
Significant Unavoidable Impacts	None	1. No significant unavoidable impacts on area recreation uses	Same as Alternative 2	1. No significant unavoidable impacts on area recreation uses	Same as Alternative 3	1. No significant unavoidable impacts on area recreation uses

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
AESTHETICS, LIGHT AND GLARE						
Construction Impacts	No construction activity on the site Timber harvesting impacts similar to clearing prior to mining	1. Cleared areas would be visible from certain areas	Same as Alternative 2	1. Cleared areas would be visible from certain areas	Same as Alternative 3	1. Similar to Alternative 2. Phased clearing would occur at the Upper Site only
Operation Impacts	Visual conditions would not change Future forestry activities would be visible from certain areas	1. Exposed mining areas and processing facilities would be visible from certain areas	1. Same as Alternative 2. Slightly less cleared area on Lower Site visible from Mount Si.	1. Same as Alternative 2. Some sources of light and glare would be transferred from the Lower Site to the Upper Site	Similar to Alternative 3. Slightly less cleared area visible from Mount Si.	1. Visual conditions would be similar to Alternative 2
		2. Mining and processing would provide new light sources in the area. Proposal would increase sources of glare.	2. Same as Alternative 2			
Cumulative Impacts	No impacts	1. The Proposal is not anticipated to increase the potential for visual impacts from additional mining operations in the vicinity	Same as Alternative 2	1. The Proposal is not anticipated to increase the potential for visual impacts from additional mining operations in the vicinity	Same as Alternative 3	1. The Proposal is not anticipated to increase the potential for visual impacts from additional mining operations in the vicinity
Mitigation Measures	No mitigation	1. Mining would be phased. Upon completion of mining within an individual phase, the mined area would be reclaimed, thus limiting the amount of mining activity during any given year	Same as Alternative 2	1. Mining would be phased. Upon completion of mining within an individual phase, the mined area would be reclaimed, thus limiting the amount of mining activity during any given year	Same as Alternative 3	1. Mining would be phased. Upon completion of mining within an individual phase, the mined area would be reclaimed, thus limiting the amount of mining activity during any given year

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
AESTHETICS, LIGHT AND GLARE						
		2. A naturally vegetated buffer would be retained around the perimeter of the Lower and Upper Sites to buffer nearby residential uses from mining and processing activities	Same as Alternative 2	2. A naturally vegetated buffer would be retained around the perimeter of the Lower and Upper Sites to buffer nearby residential uses from mining and processing activities	Same as Alternative 3	2. A naturally vegetated buffer would be retained around the perimeter of the Lower and Upper Sites to buffer nearby residential uses from mining and processing activities
		3. Mining on the Upper Site would be conducted below the existing rim of Grouse Ridge to minimize views to mining	Same as Alternative 2	3. Mining on the Upper Site would be conducted below the existing rim of Grouse Ridge to minimize views to mining	Same as Alternative 3	3. Mining on the Upper Site would be conducted below the existing rim of Grouse Ridge to minimize views to mining
		4. Vegetated view screening berms would be provided along portions of the northern, eastern, and southern sides of the mining area on the Lower Site	Same as Alternative 2	4. Vegetated view screening berms would be provided along portions of the northern, eastern, and southern sides of the mining area on the Lower Site	Same as Alternative 3	4. Vegetated view screening berms would be provided along portions of the northern, eastern, and southern sides of the mining area on the Lower Site
		5. The proposed conveyor between the Lower and Upper Sites would be enclosed in a low-reflective, natural-colored material to minimize visual and glare impacts	Same as Alternative 2	5. All outdoor lighting would be shielded to avoid glare to surrounding areas	Same as Alternative 3	5. All outdoor lighting would be shielded to avoid glare to surrounding areas
		6. Reclamation activities include slope stabilization topsoil placement; and revegetation	Same as Alternative 2	6. Reclamation activities include slope stabilization topsoil placement; and revegetation	Same as Alternative 3	6. Reclamation activities include slope stabilization topsoil placement; and revegetation
		7. Lighting meeting the specifications of the U.S. National Park Service Interim Design Guidelines for Outdoor Lighting would be required	Same as Alternative 2	7. Lighting meeting the specifications of the U.S. National Park Service Interim Design Guidelines for Outdoor Lighting would be required	Same as Alternative 3	7. Lighting meeting the specifications of the U.S. National Park Service Interim Design Guidelines for Outdoor Lighting would be required

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
AESTHETICS, LIGHT AND GLARE						
Significant Unavoidable Impacts	None	1. Mining and processing would be visible from some view points, particularly higher elevation recreation areas and the Lu Residence accessory structure	Same as Alternative 2	1. Mining and processing would be visible from some view points, particularly higher elevation recreation areas and the Lu Residence accessory structure	Same as Alternative 3	1. Mining and processing would be visible from some view points, particularly higher elevation recreation areas
		2. Proposal could increase light levels in a low light area	Same as Alternative 2	2. Proposal could increase light levels in a low light area	Same as Alternative 3	

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
PUBLIC UTILITIES						
Construction Impacts	No impacts	Construction Impacts are similar to Operation Impacts		Construction Impacts are similar to Operation Impacts		Construction Impacts are similar to Operation Impacts
Operation Impacts	No impacts	Police		Police		Police
		1. Increased local traffic	Same as Alternative 2	1. Increased local traffic	Same as Alternative 3	1. Increased local traffic
		2. Growth of the local police force		2. Growth of the local police force		2. Growth of the local police force
		Fire and Medical Services		Fire and Medical Services		Fire and Medical Services
		1. Increased truck traffic	Same as Alternative 2	1. Increased truck traffic	Same as Alternative 2	1. Increased truck traffic
		2. Risk of vehicle accidents and slower response times	Same as Alternative 2	2. Risk of vehicle accidents and slower response times	Same as Alternative 2	2. Risk of vehicle accidents and slower response times
		3. Emergency operations unique to gravel operations	Same as Alternative 2	3. Emergency operations unique to gravel operations	Same as Alternative 3	3. Emergency operations unique to gravel operations
		Electrical		Electrical		Electrical
		1. Dedicated lines from Puget Sound Energy or Tanner Electric Company substation	Same as Alternative 2	1. Dedicated lines from Puget Sound Energy or Tanner Electric Company substation	Same as Alternative 3	1. Dedicated lines from Puget Sound Energy or Tanner Electric Company substation
		2. Relocation of existing power line in the Upper Site during development	Same as Alternative 2	2. Relocation of existing power line in the Upper Site during development	Same as Alternative 3	2. Relocation of existing power line in the Upper Site during development
		3. Quality concerns associated with non-linear loading by processing equipment	Same as Alternative 2	3. Quality concerns associated with non-linear loading by processing equipment	Same as Alternative 3	3. Quality concerns associated with non-linear loading by processing equipment
		Fuel		Fuel		Fuel
		1. Existing local natural gas system cannot supply enough natural gas to the site.	Same as Alternative 2	1. Existing local natural gas system cannot supply enough natural gas to the site.	Same as Alternative 3	1. Existing local natural gas system cannot supply enough natural gas to the site.
		2. Natural gas alternative supply requires 10 miles of pipeline - not economical	Same as Alternative 2	2. Natural gas alternative supply requires 10 miles of pipeline - not economical	Same as Alternative 3	2. Natural gas alternative supply requires 10 miles of pipeline - not economical
		3. Alternative fuels such as propane gas or diesel fuel require onsite storage and truck delivery	Same as Alternative 2	3. Alternative fuels such as propane gas or diesel fuel require onsite storage and truck delivery	Same as Alternative 3	3. Alternative fuels such as propane gas or diesel fuel require onsite storage and truck delivery

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
PUBLIC UTILITIES						
		Telecommunications		Telecommunications		Telecommunications
		1. AT&T/WorldCom fiber-optic cable must be relocated from the Upper and Lower sites prior to commencement of site work.	Same as Alternative 2	1. AT&T/WorldCom fiber-optic cable must be relocated from the Upper and Lower sites prior to commencement of site work.	Same as Alternative 3	2. AT&T/WorldCom fiber-optic cable must be relocated from the site prior to commencement of site work.
		Water		Water		Water
		1. Process water demands would exceed capacity of existing utility sources	Same as Alternative 2	1. Process water demands would exceed capacity of existing utility sources	Same as Alternative 3	1. Process water demands would exceed capacity of existing utility sources
		2. Development of additional onsite sources (freshwater storage pond; groundwater) or offsite sources (truck or piping from other suppliers) required for operations	Same as Alternative 2	2. Development of additional onsite sources (freshwater storage pond; groundwater) or offsite sources (truck or piping from other suppliers) required for operations	Same as Alternative 3	2. Development of additional onsite sources (freshwater storage pond; groundwater) or offsite sources (truck or piping from other suppliers) required for operations
		Sanitary Sewer		Sanitary Sewer		Sanitary Sewer
		1. Septic system (septic tank and leachfield)	Same as Alternative 2	1. Septic system (septic tank and leachfield)	Same as Alternative 3	1. Chemical toilets possible at Upper Site
		Stormwater		Stormwater		Stormwater
		1. Stormwater interception and infiltration is planned	Same as Alternative 2	1. Stormwater interception and infiltration is planned	Same as Alternative 3	1. Stormwater interception and infiltration is planned
Cumulative Impacts	No impacts	1. Relocation of existing underground power distribution line and fiber-optic cable may result in temporary disruption of existing services	Same as Alternative 2	1. Relocation of existing underground power distribution line and fiber-optic cable may result in temporary disruption of existing services	Same as Alternative 3	1. Relocation of existing underground power distribution line and fiber-optic cable may result in temporary disruption of existing services
		2. Proposed new wells and freshwater pond may have some moderate impacts on area groundwater	Same as Alternative 2	2. Proposed new wells and freshwater pond may have some moderate impacts on area groundwater	Same as Alternative 3	2. Proposed new wells and freshwater pond may have some moderate impacts on area groundwater
Mitigation Measures	No mitigation	Police		Police		Police

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
PUBLIC UTILITIES						
		1. Fence the site and provide security services during non-working hours	Same as Alternative 2	1. Fence the site and provide security services during non-working hours	Same as Alternative 3	1. Fence the site and provide security services during non-working hours
		Fire and Medical Services		Fire and Medical Services		Fire and Medical Services
		1. Onsite availability of specialized equipment and trained staff for unique emergency situations	Same as Alternative 2	1. Onsite availability of specialized equipment and trained staff for unique emergency situations	Same as Alternative 3	1. Onsite availability of specialized equipment and trained staff for unique emergency situations
		Electrical		Electrical		Electrical
		1. Design and construct electrical power supply and distribution with power conditioning/control measures to ensure the quality of the local power supply system is not affected	Same as Alternative 2	1. Design and construct electrical power supply and distribution with power conditioning/control measures to ensure the quality of the local power supply system is not affected	Same as Alternative 3	1. Design and construct electrical power supply and distribution with power conditioning/control measures to ensure the quality of the local power supply system is not affected
		2. Use variable speed drive motors throughout the facility and the appropriate wire gauge for supply lines.	Same as Alternative 2	2. Use variable speed drive motors throughout the facility and the appropriate wire gauge for supply lines.	Same as Alternative 3	2. Size transformers to handle voltage drop and work load, place close to service points
		3. Size transformers to handle voltage drop and work load, place close to service points	Same as Alternative 2	3. Size transformers to handle voltage drop and work load, place close to service points	Same as Alternative 3	
		Fuel		Fuel		Fuel
		1. All applicable regulations should be followed	Similar to Alternative 2	1. All applicable regulations should be followed	Similar to Alternative 3	1. All applicable regulations should be followed

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
PUBLIC UTILITIES						
		Telecommunications		Telecommunications		Telecommunications
		1. Plan, design, and coordinate the relocation of the AT&T/WorldCom fiber-optic cable from proposed development areas of Upper and Lower Sites to limit interruption of communication services	Same as Alternative 2	1. Plan, design, and coordinate the relocation of the AT&T/WorldCom fiber-optic cable from proposed development areas of Upper and Lower Sites to limit interruption of communication services	Same as Alternative 3	1. Plan, design, and coordinate the relocation of the AT&T/WorldCom fiber-optic cable from proposed development areas of Upper and Lower Sites to limit interruption of communication services
		Water		Water		Water
		1. Incorporate water-saving practices into operations to minimize water use	Same as Alternative 2	1. Incorporate water-saving practices into operations to minimize water use	Same as Alternative 3	1. Incorporate water-saving practices into operations to minimize water use
		2. Maximize recovery for reuse in the extraction and batch plant processes	Same as Alternative 2	2. Maximize recovery for reuse in the extraction and batch plant processes	Same as Alternative 3	2. Maximize recovery for reuse in the extraction and batch plant processes
		Sanitary Sewer		Sanitary Sewer		Sanitary Sewer
		1. No mitigation measures are expected to be required	Same as Alternative 2	1. No mitigation measures are expected to be required	Same as Alternative 3	1. No mitigation measures are expected to be required
		Stormwater		Stormwater		Stormwater
		1. Stormwater interception and infiltration is planned and addressed further in the Water and Environmental Health section	Same as Alternative 2	1. Stormwater interception and infiltration is planned and addressed further in the Water and Environmental Health section	Same as Alternative 3	1. Stormwater interception and infiltration is planned and addressed further in the Water and Environmental Health section
		Solid Waste		Solid Waste		Solid Waste
		1. No mitigation measures are expected to be required	Same as Alternative 2	1. No mitigation measures are expected to be required	Same as Alternative 3	1. No mitigation measures are expected to be required
Significant Unavoidable Impacts	None	None	Same as Alternative 2	None	Same as Alternative 3	None

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
TRANSPORTATION						
Construction Impacts	No impacts	1. Temporary construction traffic due to operation and access road development	Same as Alternative 2	1. Additional traffic on 468th Street, SE Homestead Valley Road and SE Grouse Ridge Road	Same as Alternative 3	1. Same as Alternative 3 for SE Homestead Valley Road and SE Grouse Ridge Road
		2. Slowing and stopping of existing traffic on 468th Street in the construction zone	Same as Alternative 2	2. Increased travel clear zone along SE Grouse Ridge Road	Same as Alternative 3	
			Same as Alternative 2	3. Reduce speed/stopping on 468th Street and SE Grouse Ridge Road	Same as Alternative 3	
Operation Impacts	I-90 off-ramp at 468th Street (Exit 34) experience delays	1. Four intersections impacted along 468th Street, especially at Exit #34 and 146th Street.	Same as Alternative 2	1. Additional traffic on Homestead Valley and SE Grouse Ridge Roads	Same as Alternative 3	1. Additional traffic on Homestead Valley and SE Grouse Ridge Roads
		2. Turning conflicts at 146th Street and 468th Street.	Same as Alternative 2		Same as Alternative 3	
Cumulative Impacts	No impacts	1. Accelerate the need to improve 468th Avenue SE at 146th Street	Same as Alternative 2	No Impacts	Same as Alternative 3	No impacts
Mitigation Measures	No mitigation	1. Need to widen 468th Street to 3 lanes at 146th Street.	Same as Alternative 2	1. Improve Fire Training Academy access (SE Grouse Ridge Road), including widening and re-alignment	Same as Alternative 3	1. Improve Fire Training Academy Access Road (SE Grouse Ridge Road), including widening and realignment
		2. Improve 468th Street intersections with 146th Street, SE North Bend Way and I-90 off-ramp (add signal).	Same as Alternative 2	2. Improve SE Homestead Valley Road, including bridge widening, shoulders and overlay	Same as Alternative 3	2. Improve SE Homestead Valley Road, including bridge widening, shoulders and overlay
		3. Develop a Monitoring Plan to determine when signal at I-90/468th Avenue SE, WB ramps is warranted	Same as Alternative 2	3. At bridge over Snoqualmie River (SE Grouse Ridge Road) stop trucks before crossing one at a time.	Same as Alternative 3	3. At bridge over Snoqualmie River (SE Grouse Ridge Road) stop trucks before crossing one at a time.
		4. Installation of 8-foot-wide paved shoulders along 468th Avenue SE from the I-90 ramps to SE North Bend Way	Same as Alternative 2			

TABLE S-1 (CONTINUED
IMPACT SUMMARY

	Alternative 1 – No Action	Alternative 2 – Proposal	Lower Site Option	Alternative 3 – Lower and Upper Sites (Exit #34 and Exit #38)	Lower Site Option	Alternative 4 – Upper Site Only (Exit #38)
TRANSPORTATION						
		5. Improve signs and pavement marking at existing crossing locations on 468th Avenue SE	Same as Alternative 2			
		6. Sreet light system should be installed from I-90 through the required channelization improvements along 468th Avenue SE for night-time site operations	Same as Alternative 2			
		7. Truck traffic from the Lower Site should be restricted to use only SE 146th Street and 468th Avenue SE between SE 146th Street and the I-90 Exit 34 ramps	Same as Alternative 2			
		8. Payment of MPS fees for King County planned improvement projects	Same as Alternative 2			
Significant Unavoidable Impacts	None	None	Same as Alternative 2	None	Same as Alternative 3	None